

10/537802

ATTACHMENT A

JC17 Rec'd PCT/PTO 07 JUN 2005

Patent Claims:

1. (original) A method for the production of nanoscale particles having a so-called core and at least one so-called shell, wherein nanoscale particles of an inorganic material having a particle size of < 100 nm are used as the core, and at least one metal is applied as the shell to these particles forming the core, in solution or in suspension, by a radiation-induced redox reaction.
2. (currently amended) The method as claimed in claim 1, ~~characterized in that~~ wherein the redox reaction is induced by UV radiation.
3. (currently amended) The method as claim in claim 1 ~~or claim 2, characterized in that~~ wherein that the metal is copper or silver.
4. (original) A method for the production of nanoscale particles having a so-called core and at least one so-called shell, wherein nanoscale particles of a magnetic material having a particle size of < 100 nm are used as the core, and at least one inorganic material is applied as the shell to these particles forming the core, in solution or in suspension, by means of a pH change brought about by at least one enzyme.
5. (currently amended) The method as claimed in claim 4, ~~characterized in that~~ wherein the pH change is brought about by decomposition of urea by means of urease.

6. (currently amended) The method as claimed in Claim 4 ~~or~~
~~claim 5, characterized in that wherein~~ the magnetic
material is iron oxide, preferably magnetite.
7. (currently amended) The method as claimed in ~~any of the~~
~~preceding claims, claim 1, characterized in that wherein~~
the solvent is removed after the application of the shell
and, preferably, the powder thus obtained is calcined.
8. (currently amended) The method as claimed in ~~any of the~~
~~preceding claims, claim 1, characterized in that wherein~~
the inorganic material comprises nanoscale oxide, sulfide,
carbide or nitride powders, preferably nanoscale oxide
powders.
9. (currently amended) The method as claimed in ~~any of the~~
~~preceding claims, in particular as claimed in claim 8,~~
~~characterized in that claim 8, wherein~~ the inorganic
material has semiconductor properties.
10. (currently amended) The method as claimed in ~~any of the~~
~~preceding claims, in particular as claimed in claim 8 or~~
~~claim 9, characterized in that claim 8, wherein~~ the
inorganic material is aluminum oxide, zirconium oxide,
titanium oxide, iron oxide, cerium oxide, silicon carbide
or tungsten carbide.
11. (currently amended) The method as claimed in ~~claim 10,~~
~~characterized in that claim 8, wherein~~ the inorganic
material is aluminum oxide (Al_2O_3) or titanium oxide (TiO_2).
12. (original) A core/shell particle having a so-called core
and at least one so-called shell,

- the core comprising nanoscale particles of an inorganic material having a particle size of < 100 nm,
 - the shell being at least one metal, and
 - the core/shell particles being present substantially, preferably completely, as nonagglomerated particles.
13. (currently amended) A core/shell particle having a so-called core and at least one so-called shell, which can be produced by the method as claimed in claim 1 ~~or claim 2~~.
14. (currently amended) The core/shell particle as claimed in claim 12 ~~or claim 13~~, ~~characterized in that~~ wherein the inorganic material has semiconductor properties.
15. (currently amended) The core/shell particle as claimed in ~~any of claims 12 to 14~~, ~~characterized in that~~ claim 12, wherein the inorganic material is a nanoscale oxide powder.
16. (currently amended) The core/shell particle as claimed in ~~any of claims 12 to 15~~, ~~characterized in that~~ claim 12, wherein the inorganic material is titanium oxide (TiO₂).
17. (original) A core/shell particle, characterized in that the metal is silver or copper.
18. (original) A core/shell particle having a so-called core and at least one so-called shell,
- the core comprising nanoscale particles of a magnetic material having a particle size of < 100 nm,
 - the shell being at least one inorganic material, and
 - the core/shell particles being present substantially, preferably completely, as nonagglomerated particles.
19. (currently amended) A core/shell particle having a so-called core and at least one so-called shell, which can be produced by the method as claimed in claim 4 ~~or claim 5~~.
20. (currently amended) The core/shell particle as claimed in claim 18 ~~or claim 19~~, ~~characterized in that~~ wherein the magnetic material is iron oxide, preferably magnetite.
21. (currently amended) The core/shell particle as claimed in ~~any of claim 18 to 20~~, ~~characterized in that~~ claim 18,

wherein the inorganic material is a nanoscale oxide powder.

22. (currently amended) The core/shell particle as claimed in ~~any of claims 18 to 21, characterized in that~~ claim 18, wherein the inorganic material is titanium oxide (TiO₂).
23. (currently amended) The core/shell particle as claimed in ~~any of claims 12 to 22, characterized in that~~ claim 12, wherein the nanoscale particles which form the core have a particle size between 5 nm and 50 nm, preferably between 5 nm and 20 nm.
24. (currently amended) The core/shell particle as claimed in ~~any of claims 12 to 24, characterized in that~~ claim 12, wherein the core/shell particles have a particle size between 5 nm and 100nm, preferably between 10 nm and 50 nm, in particular between 20 nm and 45 nm.
25. (currently amended) The core/shell particle as claimed in ~~any of claims 12 to 24, characterized in that~~ claim 12, wherein they are applied to an inorganic or organic carrier or incorporated into an inorganic or organic matrix.
26. (currently amended) The use of the core/shell particles as claimed in ~~any of claims 12 to 17 and 23 to 25~~ claim 12 as biocides.
27. (currently amended) The use of the core/shell particles as claimed in ~~any of claims 18 to 25~~ claim 18 for wastewater treatment, in particular for removing heavy metals from wastewaters.